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November 30, 1891.

### ANNIVERSARY MEETING.

Sir WILLIAM THOMSON, D.C.L., LL.D., President, in the Chair.

The Report of the Auditors of the Treasurer's Accounts, on the part of the Society, was presented, by which it appears that the total receipts on the General Account during the past year, including balances carried from the preceding year and repayment of a mortgage loan of £15,000, amount to £22,433 7s. 3d. on the General Account, and that the total receipts on account of Trust Funds, including balances carried from the preceding year, amount to £6,096 12s. 10d. The total expenditure for the same period, including investments, amounts to £21,391 9s. 9d. on the General Account, and £2,340 9s. 11d. on account of Trust Funds, leaving a balance on the General Account of £1,022 5s. 8d. at the bankers', and £19 11s. 10d. in the hands of the Treasurer, and, on account of Trust Funds, a balance at the bankers' of £3,756 2s. 11d.

The thanks of the Society were voted to the Treasurer and Auditors.

The Secretary then read the following Lists :—

Fellows deceased since the last Anniversary (Dec. 1, 1890).

*On the Home List.*

Balfour, Thomas Graham, M.D.	Hewett, Sir Prescott Gardner,
Brady, Henry Bowman, F.G.S.	Bart., F.R.C.S.
Carpenter, Philip Herbert, D.Sc.	Jeffery, Henry Martyn, M.A.
Casey, John, M.R.I.A.	Jones, Thomas Wharton, F.R.C.S.
Croll, James, LL.D.	Marshall, John, F.R.C.S.
Duncan, Peter Martin, F.G.S.	Moseley, Henry Nottidge, M.A.
Granville, George Leveson Gower,	Smith, Rt. Hon. William Henry.
Earl, K.G.	York, His Grace William Thom-
Hawkshaw, Sir John, M.I.C.E.	son, Archbishop of, D.D.

*On the Foreign List.*

Becquerel, Edmond.  
Nägeli, Carl Wilhelm von.  
Weber, Wilhelm Eduard.

Fellows elected since the last Anniversary.

Anderson, William.	Hannen, Right Hon. James, Lord,
Bower, Prof. Frederick Orpen,	D.C.L.
D.Sc.	Heaviside, Oliver.
Conroy, Sir John, Bart., M.A.	Jackson, Right Hon. William
Cunningham, Prof. Daniel John,	Lawies.
M.D.	Marr, John Edward, M.A.
Dawson, George Mercer, D.Sc.	Mond, Ludwig.
Elliott, Edwin Bailey, M.A.	Shaw, William Napier, M.A.
Frankland, Prof. Percy Faraday,	Thompson, Professor Silvanus
B.Sc.	Phillips, D.Sc.
Gilchrist, Percy Carlyle.	Tizard, Captain Thomas Henry,
Halliburton, William Dobinson,	R.N.
M.D.	

*On the Foreign List.*

Agassiz, Alexander.	Strasburger, Eduard.
Gould, Benjamin Apthorp.	Tacchini, Pietro.

The President then addressed the Society as follows :—

Since the last Anniversary Meeting the Royal Society have lost fifteen of their Fellows and three Foreign Members.

James Croll, who died on the 15th of December, at the age of sixty-nine, presented in his life a rare case of inborn passion for

philosophy and science conquering all obstacles and attaining to the object of life-long devotion to scientific research and philosophical speculation. Dependent wholly on his own work for his support, he commenced earning a livelihood as a beginner in a merchant's office; and with his ability he might, no doubt, have earned promotion and become a successful merchant. But the superior attraction of philosophy prevailed, and he wrote a book on the 'The Philosophy of Theism,' which was published in a large octavo volume, I believe while he was still working in the merchant's office. After being one out of about seventy unsuccessful candidates for the post of Under-Keeper of the Hunterian Museum of the University of Glasgow, he was appointed in 1859 to the post of Janitor of Anderson's College, Glasgow. About this time the Geological Society of Glasgow was founded, and became the centre of an active company of geologists, who took up the study of the traces of the Glacial period, so striking and abundant in the West of Scotland. Croll and his successful competitor for the University post, John Young, both of them with characteristic ardour, threw themselves into the work of geology. Croll, according to his peculiar bent of mind, was drawn chiefly into the more speculative lines of geological inquiry, and in 1864 published his essay on 'The Physical Cause of the Changes of Climate during the Glacial Epoch,' which deservedly gained the careful consideration both of geologists and of astronomers. This speculation undoubtedly presented a *vera causa* for some of the changes of climate which have occurred in geological history, although we can scarcely consider it adequate to be so powerful and exclusive a factor as Croll endeavoured to make it. His vigorous dispute with Carpenter regarding oceanic circulation rightly enforced attention to the importance of wind as the prime mover of some of the great ocean currents, but did not overthrow Carpenter's very important views regarding the effects of heat, according to which differences of temperature in the water itself in different regions and at different depths have paramount efficacy in producing some of the great oceanic circulations. After serving for eight years as Janitor in Anderson's College, Glasgow, Croll was selected by Sir Archibald Geikie to take charge of the maps and correspondence of the Geological Survey in Edinburgh. But, according to rule, he must be examined, and the Civil Service examiners plucked him in arithmetic and English composition. On the strong urgency of Sir Roderick Murchison (who asked me, from my personal knowledge of Croll, to write a statement of my opinion regarding his qualifications), the Civil Service Commissioners, with a wisely liberal relaxation of their rules, accepted his great calculations regarding the eccentricity of the earth's orbit and the precession of the equinoxes during the last ten million years as sufficient evidence of his arithmetical capacity, and his book on

'The Philosophy of Theism' and numerous papers published in scientific journals as proof of his ability to write good English. He was, therefore, allowed to receive the appointment in the Geological Survey in Edinburgh, though he had failed to pass the qualifying examination. During the rest of his life he was thus kept in relation with the great practical work of the Geological Survey in Scotland, and was allowed time to devote himself to speculative study and writing in geological physics, astronomy, and philosophy. During the last year of his life he sent to press his last work, published a few weeks before his death, entitled 'The Philosophical Basis of Evolution.'

The bitter winter of 1891 severely tried the health of many distinguished men. During the first seventeen days of January the Royal Society lost four Fellows.

John Marshall was Professor of Anatomy to the Royal Academy, and, as representative of the Royal College of Surgeons, President of the General Medical Council. His contributions to surgical literature, though not numerous, were considered of high value by those able to judge. He died, on the 1st January, at the age of seventy-two.

Dr. Casey, Fellow of the Royal University of Ireland, distinguished as a mathematician, was corresponding member of several scientific societies, and author of historical and elementary works on various branches of mathematics. He was in vigorous health until a short time before his death, when he was seized with bronchitis. He died, on January 3rd, at the age of seventy.

Dr. Brady's scientific reputation was mainly connected with his researches on the Rhizopoda and other minute forms of Invertebrate life. On these he published many memoirs of great value, by which knowledge was largely advanced. He was a Fellow of the Royal Society, the Linnean Society, and the Geological Society; and corresponding member of several foreign scientific bodies. He died, on January 10th, at the age of fifty-six. He bequeathed to the Royal Society all his books and papers relating to the Protozoa, with an additional benefaction to which I shall refer later.

Dr. Graham Balfour was Surgeon-General to the Army and Honorary Physician to the Queen, and President of the Royal Statistical Society. He died, on January 17th, at the age of sixty-eight.

Dr. Peter Martin Duncan, Professor of Geology in King's College, was well known, not only as a geologist who devoted himself especially to the study of fossil Corals and Echinoderms, and added greatly to knowledge by his valuable published memoirs on that subject, but also as a popular exponent of geology and zoology and an author and editor of works extending through the whole range of natural history. One great result of his work was a popular 'Natural History,' in six quarto volumes, brought out between the years 1878 and 1883, written by able specialists, on a comprehensive plan under

his own direction, and containing many articles written by himself. He died, on May 29th, at the age of sixty-seven.

Sir John Hawkshaw was undoubtedly one of the greatest engineers of this century. At the age of twenty-one he was appointed to take charge of important mining works in Venezuela, where he remained for three years, chiefly occupied in improving the navigation of the River Aroa for flat-bottomed boats employed to carry away the produce of the St. Felipe copper mines. Repeated attacks of fever and ague compelled him to return to England, but not until after many of the English miners employed under him, chiefly picked men from Cornwall, and several of the medical attendants of the station, had died from the effects of the unhealthy climate. The house in which he lived at the mines still exists, and bears his name. Soon after he left, all its inhabitants were murdered; and it has remained uninhabited ever since. From his return to England in 1834 until a few years before his death Hawkshaw was successfully occupied in the design, and in superintendence of the execution, of great engineering works; and in advising the Government, municipal corporations, and other public bodies, upon every variety of engineering questions. He early made his mark in engineering science and practice in respect to two important questions. In 1838 he reported to the Great Western Railway Company strongly against maintaining their broad gauge, and advocated a uniform gauge throughout the country; a few years later, in a keen contest of opinion against Robert Stephenson, he urged the practicability and advantageousness of introducing steeper gradients. The soundness of his views on both these questions is now generally admitted: and the introduction of steeper gradients, in consequence of his advocacy, led to a rapid extension of railways in all parts of the world. He was President of the Institution of Civil Engineers, 1862-63, and President of the British Association at Bristol in 1875. He died, on June 2nd, at the age of eighty.

Sir Prescott Gardner Hewett was Professor of Human Anatomy and Surgery in the College of Surgeons; and became President of the College as successor to Sir James Paget in 1883. He won high reputation, also, as an artist. Even while most occupied in his arduous profession as a surgeon, he took recreation in painting and drawing with a persevering zeal and a high degree of success rare among amateurs. He died on the 19th of June, at the age of seventy-nine.

Dr. Philip Herbert Carpenter was a member of the scientific staff of the deep-sea exploring expeditions of Her Majesty's steamships "Lightning" (1868) and "Porcupine" (1869-70); and in 1875 he was appointed Assistant Naturalist to Her Majesty's ship "Valorous," which accompanied Sir G. Nares' Arctic expedition to Disco

Island, and spent the summer sounding and dredging in Davis Strait and the North Atlantic. He devoted himself continuously, from 1875, to studying the morphology of the Echinoderms, more particularly of the Crinoids, both recent and fossil. He wrote numerous papers, which were published in the Transactions of the Royal Society and of the Linnean and Geological Societies. In 1883 he was awarded the Lyell Fund by the Geological Society of London, in recognition of the value of his work, and in 1885 was elected a Fellow of the Royal Society. In 1877 he was appointed Assistant-Master at Eton, especially charged with the teaching of biology, and held this post till his death, on the 21st October, at the age of thirty-nine.

Dr. Henry Moseley, Linacre Professor of Human and Comparative Anatomy in the University of Oxford, one of the eminent naturalists of the "Challenger" expedition, who served on board the "Challenger" during the entire voyage round the world, from 1872 till 1876, died on the 10th of this month, at the age of forty-six. He was author of many important papers in various branches of natural history, chiefly comparative anatomy and marine zoology.

Henry Martyn Jeffery, after taking high places in the Mathematical and Classical Triposes at Cambridge in 1849, commenced professional life as Lecturer in the College of Civil Engineers in Putney; and in later years continued it as Headmaster of Pate's Grammar School, Cheltenham, until he retired in 1882. As a teacher he was largely occupied with classics, but his favourite study was mathematics, and he is well known as the author of a long and continuous series of papers on subjects of pure mathematics which have been published in the 'Quarterly Journal of Mathematics,' the 'Journal of the London Mathematical Society,' and the 'Reports of the British Association.' He was actively occupied to the last with mathematical work and in the preparation of a text-book on his favourite mathematical subjects. He died, on the 3rd of November, at the age of sixty-six.

Thomas Wharton Jones, a distinguished physiologist, died on the 7th of this month, at nearly eighty years of age. Professor Huxley was one of his pupils forty years ago and gives bright and pleasant reminiscences of intercourse with his "old master."

Three distinguished men occupying high positions in the State, Fellows of the Royal Society, his Grace William Thomson, D.D., Lord Archbishop of York; the Right Honourable George Leveson-Gower, K.G., Earl of Granville; and the Right Honourable William Henry Smith, M.P.; died during the past year at the ages of seventy-two, seventy-six, and sixty-six.

The career of Carl Wilhelm von Nägeli, of Munich, during fifty years of most active and fertile scientific work, is of special interest in the history of botany and of biological speculation. He was elected

Foreign Member of the Royal Society in 1881, and died on the 10th of May, 1891, at the age of seventy-four.

The name of Becquerel has been famous in science since the days of Biot, Davy, De La Rive, Faraday, Ampère, and Arago. I well remember going to the Jardin des Plantes, in Paris, in January 1845, with an introduction from Professor James Forbes to Antoine César Becquerel, who, even at that remote time, was a veteran in physical science; and finding him in his laboratory there, assisted in work regarding electrolytically deposited films on polished metallic surfaces and their colours, by his son Edmond, a bright young man who had already commenced following his father's example as an active worker in experimental physics. He had been associated in 1839 with his father and the still older veteran, Biot, in experiments on phosphorescence produced by electric currents, a subject the profound importance of which is more appreciated now than it was then. Through fifty years of active and fruitful work in many departments of physical science, that subject of phosphorescence remained a speciality with Edmond Becquerel; and his son Henri, who survives him, has, in his turn, taken it up and given important contributions to knowledge regarding it. Edmond Becquerel was elected Foreign Member of the Royal Society in 1888, and died on the 11th of May, 1891, at the age of seventy-one.

Wilhelm Eduard Weber, of Göttingen, the second of three sons of Michael Weber (Professor of Positive Divinity at the beginning of this century in Wittenberg), of whom two were Foreign Members of the Royal Society and all three active workers for the advancement of natural knowledge, was elected Foreign Member of the Royal Society in 1850, and died on the 24th of June, 1891, at the age of eighty-seven. He was colleague of Gauss in the great work on magnetic measurement and on terrestrial magnetism of which they gave fruits to the world in the 'Resultate aus den Beobachtungen des Magnetischen Vereins.' The system of absolute measurement which Gauss introduced for magnetism in general, and applied practically to terrestrial magnetism, was nobly followed up by Weber, in extending it to electromagnetism and electrostatics, a truly epoch-making work in physical science. On it is founded the splendidly valuable system of practical measurement, in absolute units, of electric resistance, of electromotive-force, and of electric current, which, after a first introduction into this country in the year 1851, and a forty years' struggle, has, since the last Anniversary Meeting of the Royal Society, become definitively legalised for England through the action of the Board of Trade, advised by a Committee to which the Royal Society, the British Association, and the Institution of Electrical Engineers were invited to send, and sent, representatives.

The Royal Society, since the last Anniversary Meeting, have been,

as always, active both in the proceedings of their ordinary meetings, which have been full of scientific interest, and in the conduct of the important affairs committed to their Council. During the past year nineteen memoirs have been published in the 'Philosophical Transactions,' containing a total of 1020 pages and 60 plates. Of the 'Proceedings,' six numbers have been issued, containing 893 pages. Of the large number of papers which have been published in the 'Proceedings' two-thirds are on the physics and dynamics of dead matter and one-third on biological subjects.

As stated by Sir George Stokes in his Presidential Address at the last Anniversary Meeting, a revision of the whole body of the Statutes of the Royal Society had been entered upon, a Committee had recently reported to the Council, and their report had been left to the new Council then entering on office to take such action in the matter as might be judged proper. The Council now concluding their term of office have accordingly given much time to the subject, and have completed the work of re-enacting the Statutes with such amendments as have seemed desirable. The only questions upon which there was effective difference of opinion were those connected with the election of Fellows, which were referred to by Sir George Stokes as having elicited considerable difference of opinion in the reporting Committee. The Council, after much anxious consideration, resolved to make no change of the existing Statutes in this respect.

There have been no changes during the past session in the constitution of the staff employed in the Offices and Library; but in the Catalogue Department, two lady assistants and two copyists have been engaged to work under the superintendence of Miss Chambers, who succeeded in July of last year to the post rendered vacant by the death of the late Mr. Holt, and who continues to give every satisfaction in the discharge of her duties.

In January of the present year a communication was received from our Fellow Professor G. S. Brady, intimating that his brother, the late Mr. Henry Bowman Brady, whose decease I have already mentioned, had bequeathed to the Society all his books and papers relating to the Protozoa, with the recommendation that they should be kept together as a distinct collection. In case this recommendation should be adopted, a further bequest of £300 was made, the interest of principal or both to be applied, at the discretion of the Council, to the purchase of works on the same or kindred subjects, to be added to the collection. The Council have accepted both these bequests, and a case marked with an engraved plate has been set aside in the Library for the accommodation of the Brady collection.

His Excellency Robert Halliday Gunning, M.D., LL.D., F.R.S.E., who in 1887 founded certain scholarships and prizes, called the Victoria Jubilee Prizes, for the promotion of original scientific work



and proficiency in scientific education in connection with the Royal Society of Edinburgh, the University of Edinburgh, and other institutions in that city, desires to institute foundations of a similar kind in London. He has accordingly given to the Royal Society a sum of £1000, to be ultimately invested in such manner as the President and Council, in their absolute and uncontrolled discretion, may think fit, and to be held in trust always for the purpose of forming a fund the annual income of which shall be applied triennially towards the promotion of physical science and biology in such manner as to the President and Council of the Royal Society may appear most desirable. The President and Council, for the time being, are given full power to make such rules and regulations as they think fit with regard to the application of the income of the fund, which "shall always be kept distinct from and not in any way immixed with the general funds of the Royal Society."

A very important resolution for the advancement of natural knowledge has been adopted during the past year by the Royal Commissioners of the Exhibition of 1851, in the institution of the Exhibition Science Scholarships, to which, after the first year, an expenditure to the extent of £5,000 a year is to be devoted. Sixteen appointments have already been made to scholarships of £150, to be held for two years, with possible renewal for a third year. The Commissioners require of each candidate for an appointment satisfactory evidence of proficiency in a three years' course of University or high class College study, and of capacity for experimental work. To the tenure of each scholarship the duty is assigned of advancing science by experimental work in physics, mechanics, chemistry, or any application of science tending to benefit our national industries.

A Committee of the British Association appointed for the purpose of reporting on the best means of comparing and reducing observations on terrestrial magnetism has strongly recommended the re-establishment of a magnetic observatory at the Cape of Good Hope. A conference on the subject was held between the Committee and Dr. Gill, the Astronomer Royal of the Cape of Good Hope, last June, during his recent visit to England, which has resulted in an application to the Admiralty to carry this recommendation into practical effect in connection with the astronomical observatory of the Cape of Good Hope (belonging to the Admiralty). This application is at present under the consideration of the Admiralty.

A fundamental investigation in astronomy, of great importance in respect to the primary observational work of astronomical observatories, and of exceeding interest in connection with tidal, meteorological, and geological observations and speculations, has been definitively entered upon during the past year, and has already given substantial results of a most promising character. The International

Geodetic Union, at its last meeting in the autumn of 1890, on the motion of Professor Foerster, of Berlin, resolved to send an astronomical expedition to Honolulu, which is within  $9^{\circ}$  of the opposite meridian to Berlin ( $171^{\circ}$  west from Berlin), for the purpose of making a twelve months' series of observations on latitude corresponding to twelve months' analogous observations to be made in the Royal Observatory, Berlin. Accordingly Dr. Marcuse went from Berlin, and, along with Mr. Preston sent by the Coast and Geodetic Survey Department of the United States, began making latitude observations in Honolulu about the beginning of June. In a letter from Professor Foerster, received a few weeks ago, he tells me that he has already received from Honolulu a first instalment of several hundred determinations of latitude, made during a first three months of the proposed year of observations; and that, in comparing these results with the corresponding results of the Berlin Observatory, he finds beyond doubt that in these three months the latitude increased in Berlin by one-third of a second and decreased in Honolulu by almost exactly the same amount. Thus, we have decisive demonstration that motion, relatively to the Earth, of the Earth's instantaneous axis of rotation, is the cause of variations of latitude which had been observed in Berlin, Greenwich, and other great observatories, and which could not be wholly attributed to errors of observation. This, Professor Foerster remarks, gives observational proof of a dynamical conclusion contained in my Presidential Address to Section A of the British Association, at Glasgow, in 1876, to the effect that irregular movements of the Earth's axis to the extent of half a second may be produced by the temporary changes of sea-level due to meteorological causes.

It is proposed that four permanent stations for regular and continued observation of latitude, at places of approximately equal latitude and on meridians approximately  $90^{\circ}$  apart, should be established under the auspices of the International Geodetic Union. The reason for this is that a change in the instantaneous axis of rotation in the direction perpendicular to the meridian of any one place would not alter its latitude, but would alter the latitude of a place  $90^{\circ}$  from it in longitude by an amount equal to the angular change of the position of the axis. Thus two stations in meridians differing by  $90^{\circ}$  would theoretically suffice, by observations of latitude, to determine the changes in the position of the instantaneous axis; but differential results, such as those already obtained between Berlin and Honolulu, differing by approximately  $180^{\circ}$  in longitude, are necessary for eliminating errors of observation sufficiently to give satisfactory and useful results. It is to be hoped that England, and all other great nations in which science is cultivated, will co-operate with the International Geodetic Union in this important work.

Among the most interesting scientific events of the past year was the celebration of the 100th anniversary of the birth of Faraday by the two Faraday Lectures in the Royal Institution last June. In the first of these, which was delivered by Lord Rayleigh, under the presidency of the Prince of Wales, an old pupil of Faraday's and now Vice-Patron of the Royal Institution, a general survey of Faraday's work during his fifty-four years' connection with the Royal Institution was given. Naturally, a large part of the lecture was devoted to magnetism and electricity and to electro-magnetic induction; but it contained also much that must have been surprising to the audience, scarcely prepared to be told, as they were told by Lord Rayleigh, that "Faraday's mind was essentially mathematical in its qualities," and that, particularly in his acoustical work, he had made many very acute observations of physical phenomena, of a kind to help in guiding the mathematician to the solution of difficult and highly interesting problems of mathematical dynamics, and in some cases actually to give him the solution surprisingly different from what might have been expected even by highly qualified mathematical investigators.

The other Faraday Lecture, given by Professor Dewar, was a splendid realisation of Faraday's anticipations regarding the liquefaction of the "permanent gases," according to which no extreme of pressure might be capable of liquefying hydrogen or oxygen at ordinary temperature, while a very moderate pressure might suffice to liquefy them if their temperatures could be sufficiently lowered. Professor Dewar actually showed liquid oxygen in a glass tumbler, not boiling or in a state of commotion like a tumbler of soda-water, but quietly and without any sensible motion keeping itself cool by its own evaporation, while it rapidly formed a thick jacket of hoar-frost on the outside of the vessel by condensation of watery vapour from the surrounding atmosphere. The surprise and delight of the audience reached a climax when liquid oxygen was poured from one open vessel to another before their eyes.

A matter of great importance in respect to the health of the community was submitted to the Royal Society by the London County Council, in a letter of date May 1, 1891, asking for information and suggesting investigation regarding the vitality of microscopic pathogenic organisms in large bodies of water, such as rivers which are sources of water-supply and which are exposed to contamination. After some correspondence it was agreed, between the County Council and the Council of the Royal Society, to enter upon an investigation, the expense of which was to be defrayed partly by the London County Council and partly by the Royal Society out of the Government Grant for Scientific Research. When we consider how much of disease and death is due to contaminated water, we must feel that it is scarcely possible to overestimate the vital importance of the pro-

posed investigation. Let us hope that the alliance between the London County Council and the Royal Society, for this great work, may be successful in bringing out practically useful results.

The President then presented the Medals awarded by the Society, as follows :—

*Professor Stanislao Cannizzaro (Copley Medal).*

Stanislao Cannizzaro, Senator of Italy, and Professor of Chemistry in the University of Rome, has rendered invaluable service to the philosophy of modern chemical science. The work of Avogadro, in 1811, and afterwards that of Ampère, had already thrown much light on the relative weights of the molecules of elementary bodies, and on the proportions in which those weights enter into chemical combination. But it is to Cannizzaro that we owe the completion of what they had left unfinished. He pointed out the all-important difference, hitherto overlooked, between molecular and atomic weights, and showed—(1) How the atomic weights of the elements contained in a volatile compound can be deduced from the molecular weights of such compounds; (2) how the atomic weights of the elements the vapour-densities of whose compounds were unknown can be ascertained by help of their specific heats. By these investigations the series of atomic weights of the elements, the most important of all chemical constants, and the relation which these weights bear to the molecular weights of the elements, have been placed on the firm basis on which they have ever since rested. It is to Cannizzaro that science is indebted for this fundamental discovery, and it is this which it is proposed to recognise by the award of the Copley Medal.

*Professor Charles Lapworth, F.R.S. (Royal Medal).*

Professor Lapworth is the author of some of the most original and suggestive papers which have appeared in the geological literature of this country for the last twenty years. Special reference may be made to his researches on graptolites, and to his patient investigation by these means of the exceedingly complicated structure of the Silurian uplands of the South of Scotland. He has been able not only to supply the key which has given the solution of the stratigraphical difficulties of that region, but also to furnish theoretical geology with an array of new facts from which to philosophise as to the mechanism of mountain-making. Of not less importance are his detailed studies of the structure of the North-west Highlands and his demonstration of the true order of stratigraphical sequence in that region of complex disturbance. As a stratigraphist he has attained the highest rank, and he has likewise made himself a chief palæonto-

logical authority on the structure and distribution of the Graptolitidæ. For some years past he has been engaged in a laborious study of the Silurian and Cambrian rocks of the middle of England, the detailed publication of which is awaited with much interest by geologists.

*Professor Rücker, F.R.S. (Royal Medal).*

In conjunction with Professor Reinold, Professor Rücker carried out an important series of researches (extending over ten years) on the electric resistance and other physical properties of liquid films, in the course of which the fact was established that the black part of a soap film in equilibrium has a uniform or nearly uniform thickness of 11 or 12 micromillimetres, and that there is an abrupt augmentation across its border to a thickness of about 30 or 40 micromillimetres in passing to the coloured portions. This, considered in connection with the well-known sudden opening out of the little black areas in an ordinary soap-bubble, proves a minimum of surface-tension for some thickness between 10 and 50 micromillimetres, which, in the ordinary soap-bubble unmodified by Reinold and Rücker's electric current, is temporarily balanced in virtue of the abrupt change of thickness, a proposition of fundamental importance in the molecular theory, implying the existence of molecular heterogeneousness.

In theoretical calculations connected with the compounding of dynamos and motors to produce constant potential difference, constant current, or constant speed, electricians did not see their way to obtain results of a sufficiently simple character to be of use in practice, if they employed a function of the current which fairly represented the magnetism. They were, therefore, compelled to assume in such calculations that the magnetism was a linear function of the current, although it was well known that this was very far from being true when the current was large. Professor Rücker, however, developed a simple method of attacking such problems, and showed how the magnetic saturation of the iron might be taken into account, and a comprehensive solution of the general problem of compounding dynamos and motors obtained in a workable form. Professor Rücker's paper containing his investigation, and which will be found in the 'Proceedings of the Physical Society,' is a most valuable contribution to the theory of direct-current dynamos and motors.

Professor Rücker has, with the co-operation of Professor Thorpe, completed a Magnetic Survey of the British Isles (1884-89), which, independently of its great value in investigations of the distribution of the earth's magnetism, and the changes to which it is subject, is specially remarkable for the exhaustive discussion of the observations in reference to regions of local magnetic disturbance, and their relation to the geological constitution of the earth's crust in the neigh-

bourhood. Professor Rücker has followed up this discussion by a paper on "The Relation between the Magnetic Permeability of Rocks and Regional Magnetic Disturbances," read before the Royal Society. The high estimate that has been formed of the value of this Magnetic Survey is perhaps most easily appreciated from the very large sums that the Government Grant Committee have recommended should be contributed to aid in the completion of this work of international importance.

*Professor Victor Meyer (Davy Medal).*

Professor Victor Meyer, formerly the successor of Wöhler at Göttingen, and who now occupies the chair of Bunsen at Heidelberg, is eminent as an original worker and discoverer in almost every branch of chemical science. His methods of determining the vapour densities of substances have been of the greatest service to chemists, not only as convenient and generally applicable modes of ascertaining atomic and molecular weights, but also as serving to throw light on the molecular constitution of elements and compounds under varying conditions of temperature and pressure. A striking example of the value of these methods is seen in their application by their author to the study of the molecular dissociation of the element iodine—one of the most masterly investigations of recent years, and which is universally recognised as of the very highest significance and importance. Not less noteworthy are Victor Meyer's services to organic chemistry. His work on the nitroso-bodies, and his brilliant discovery of thiophene, the initial member of a class of substances hitherto unknown, his subsequent synthetical formation of it, and the remarkable series of researches on its derivatives, in part carried out with the aid of his pupils, stamp him as an investigator of exceptional power and distinction.

The Statutes relating to the election of Council and Officers were then read, and Mr. Crookes and Prof. Meldola having been, with the consent of the Society, nominated Scrutators, the votes of the Fellows present were taken, and the following were declared duly elected as Council and Officers for the ensuing year:—

*President.*—Sir William Thomson, D.C.L., LL.D.

*Treasurer.*—John Evans, D.C.L., LL.D.

*Secretaries.*—{ Professor Michael Foster, M.A., M.D.  
The Lord Rayleigh, M.A., D.C.L.

*Foreign Secretary.*—Sir Archibald Geikie, LL.D.

*Other Members of the Council.*

Captain William de Wiveleslie Abney, C.B.; William Thomas Blanford, F.G.S.; Professor Alexander Crum Brown, D.Sc.; Professor George Carey Foster, B.A.; James Whitbread Lee Glaisher, D.Sc.; Frederick Ducane Godman, F.L.S.; John Hopkinson, D.Sc.; Professor George Downing Liveing, M.A.; Professor Joseph Norman Lockyer, F.R.A.S.; Professor Arthur Milnes Marshall, D.Sc.; Philip Henry Pye-Smith, M.D.; William Chandler Roberts-Austen, F.C.S.; Professor Edward Albert Schäfer, M.R.C.S.; Sir George Gabriel Stokes, Bart, M.A.; Professor Sydney Howard Vines, M.A.; General James Thomas Walker, C.B.

The thanks of the Society were given to the Scrutators.

# Balance Sheet. 1891.

Statement of Receipts and Expenditure from November 12th, 1890, to November 12th, 1891.

	£	s.	d.
To Balance at Bank, 12th November, 1890 .....	1,753	9	5
" Balance in hand, Catalogue Account .....	2	15	1
" " Petty Cash .....	23	3	5
" Compositions .....			
" Admission Fees .....	240	0	0
" Annual Contributions, 142 at £4.....	568	0	0
" " 163 at £3.....	489	0	0
" Fee Reduction Fund, in lieu of Admission Fees and			
" Annual Contributions .....	312	0	0
" Rents:	£	s.	d.
" Fee Farm, Lewes .....	18	14	5
" Mablethorpe Estate .....	97	10	0
" Ground Rents .....	604	10	6
" Dividends (exclusive of Trust Funds) .....	1,999	8	5
" Interest on Mortgage Loan :	£	s.	d.
" W. H. Long .....	356	12	1
" Duke of Norfolk .....	54	12	0
" Sale of Transactions and Proceedings .....	565	15	2
" Sale of Catalogue .....	42	18	9
" Sale of Krakatoa Report (leaving £91 12s. 3d. Ex-			
" penditure in excess of Receipts) .....	3	5	0
" Transfer from Handley Fund on account of Catalogue	187	2	4
" Lendenfeld Monograph, Sales (leaving £678 6s. 9d.			
" expenditure in excess of receipts) .....	4	0	0
" Mortgage Loan, repaid .....	15,000	0	0
" Interest on Bank Deposit Account .....	90	10	2

£22,433 7 3

	£	s.	d.
By Salaries, Wages, and Pension .....	1,662	13	6
" Catalogue of Scientific Papers .....	823	7	6
" Books for the Library .....	382	11	10
" Printing and Advertising Transactions,			
" and Separate Copies to Authors and			
" Publisher .....	607	9	11
" Ditto Proceedings, Nos. 295 to 302....	460	4	3
" Ditto Miscellaneous .....	115	3	9
" Paper for Transactions and Pro-			
" ceedings .....	315	12	0
" Binding ditto .....	44	9	0
" Engraving and Lithography .....	903	13	7
" Soirée and Reception Expenses .....	220	14	11
" Coal, Lighting, &c. ....	47	7	7
" Office Expenses .....			
" House Expenses (including painting			
" Library) .....	369	9	3
" Tea Expenses .....	18	7	5
" Fire Insurance .....	55	5	0
" Taxes .....	45	7	6
" Advertising .....	20	4	6
" Postage, Parcels, and Petty Charges	64	4	9
" Miscellaneous Expenses .....	27	5	2
" Law Charges .....			
" Carrington Donation .....	15	12	10
" Challenger Report, payment to Mr. J. Murray .....	30	0	0
" (Leaving balance in hand of £500.)	500	0	0
" £4,000 Southern Mahratta Railway	£	s.	d.
" 4 per Cent. Debenture Stock at 117 $\frac{3}{4}$ .....	4,745	13	6
" £2,000 India 3 $\frac{1}{2}$ per Cent. at 106 $\frac{3}{4}$ ....	2,135	4	0
" £5,185 Os. 3d. Consolidated 2 $\frac{1}{4}$ per			
" Cent. Stock at 94 $\frac{3}{4}$ .....	4,919	2	6
" Mortgage Loan to Duke of Norfolk..	3,200	0	0
" Balance at Bankers .....			
" Balance on hand, Catalogue Account	£4	14	1
" Ditto, Petty Cash .....	14	17	9
	£22,433	7	3

1891.]

Financial Statement.

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# *Estates and Property of the Royal Society, including Trust Funds.*

Estate at Mablethorpe, Lincolnshire (55A. 2R. 2P.), rent £100 per annum.

Ground Rent of House, No. 57, Basinghall Street, rent £380 per annum.

" " of 23 houses in Wharton Road, West Kensington, rents £253 per annum.

Fec Farm Rent, near Lewes, Sussex, £19 4s. per annum.

One-fifth of the clear rent of an estate at Lambeth Hill, from the College of Physicians, about £52 per annum, Croonian Lecture Fund.

Stevenson Bequest. Chancery Dividend. One-fourth annual interest on Bank Stock and other Securities (produced £609 15s. 11d. in 1890-91).

The Funds in Court now standing to the credit of the cause are as follows:—

£11,000 Bank Stock.

£11,031 London and North Western Railway Consolidated 4 per Cent. Guaranteed Stock.

£11,105 Great Northern Railway 4 per Cent. Perpetual Preference Stock.

£11,031 North Eastern Railway Consolidated 4 per Cent. Guaranteed Stock.

£8,894 Great Western Railway 5 per Cent. Consolidated Guaranteed Stock.

£11,035 16s. 5d. Midland Railway 4 per Cent. Consolidated Preference Stock.

Subject to certain charges, the Royal Society is entitled to one-fourth of the proceeds.

£3,200 Mortgage Loan, 3½ per Cent.

	£	s.	d.
{ being £10,779 8s. 2d. on account of the following Funds:—			
Ramford Fund .....	2,330	0	0
Winttingham Fund .....	1,200	0	0
Gassiot Trust .....	400	0	0
Sir J. Copley Fund .....	1,666	13	4
Jodrell Fund .....	5,182	14	10

{ £5,185 0s. 3d. General Purposes.

{ and £3,518 0s. 3d. in Chancery, arising from sale of the Coleman Street Estate.—General Purposes.

£403 9s. 8d. New 2½ per Cent. Stock.—Bakerian and Copley Medal Fund.

£3,000 India 3½ per Cent. Stock.—General Purposes.

£800 Midland Railway 3 per Cent. Debenture Stock.—Keck Bequest.

£5,660 Madras Railway Guaranteed 5 per Cent. Stock { General Purposes, £5,000.

£10,000 Italian Irrigation Bonds.—The Gassiot Trust. { Davy Medal Fund, £660.



## Trust Funds. 1891.

## Scientific Relief Fund.

£6,000 L. & N.W.R. 4 per Cent. Consolidated Guaranteed Stock.  
 £6,666 13s. 4d. Great Northern Railway 3 per Cent. Debenture Stock.  
 £4,340 South Eastern Railway 5 per Cent. Debenture Stock.

Dr.

	£	s.	d.	£	s.	d.
To Balance { Income.....	756	15	9			
Less — Capital over-in-vested .....	24	10	3			
Dividends .....				752	5	6
Annual Subscriptions .....				640	11	6
Interest on Deposit .....				5	0	0
H. B. Brady. Bequest .....				13	14	5
				500	0	0
				£1,891	11	5

	£	s.	d.
By Grants.....	441	0	0
Balance, Income.....	£970	1	8
Capital.....	480	9	9
	1,450	11	5
	£1,891	11	5

## Donation Fund.

£5,080 Great Northern Railway Perpetual 4 per Cent. Guaranteed Stock.  
 The Trevelyan Bequest. £1,861 6s. 8d. Great Northern Railway 3 per Cent. Debenture Stock.

	£	s.	d.
To Balance .....	789	12	5
Dividends .....	250	12	2
Transfer from Jodrell Fund .....	139	3	4
	£1,179	7	11

	£	s.	d.
By Grants .....	302	13	0
Balance .....	876	14	11
	£1,179	7	11

*Rumford Fund.*

£2,330 2½ per Cent. Consolidated Stock.

	£	s.	d.		£	s.	d.
To Balance .....	142	18	1	By Medal .....	59	4	11
" Dividends .....	62	5	4	" Balance .....	145	18	6
	£205	3	5		£205	3	5

*Bakerian and Copley Medal Fund.*

Sir Joseph Copley's Gift, £1,666 13s. 4d. 2½ per Cent. Consolidated Stock.

£403 9s. 8d. New 2½ per Cent. Stock.

	£	s.	d.		£	s.	d.
To Balance .....	119	2	6	By Gold Medal .....	4	12	0
" Dividends, New 2½ per Cent. Stock .....	9	16	8	" Professor Newcomb, Sir J. Copley's Gift .....	50	0	0
" Dividend—Sir J. Copley's Fund .....	44	13	4	" " Schuster... £4 } Bakerian Lecture .....	8	0	0
				" G. H. Darwin..... 4 }	111	0	6
				" Balance.....			
	£173	12	6		£173	12	6

*The Keck Bequest.*

£800 Midland Railway 3 per Cent. Debenture Stock.

	£	s.	d.		£	s.	d.
To Dividends .....	23	8	0	By Payment to Foreign Secretary .....	23	8	0

*Wintringham Fund.*£1,200 2 $\frac{3}{4}$  per Cent. Consolidated Stock.

	£	s.	d.		£	s.	d.
To Balance .....	32	4	0	By Payment to Foundling Hospital.....	32	4	0
" Dividends .....	32	4	0	" Balance .....	32	4	0
	<hr/>				<hr/>		
	£64	8	0		£64	8	0
	<hr/>				<hr/>		

*Croonian Lecture Fund.*

One-fifth of the clear rent of an Estate at Lambeth Hill, from the College of Physicians, about £52 per annum.

To Rent .....	£	s.	d.	By Lecture (1890) —Professor Marshall Ward .....	£	s.	d.
	100	19	4	„ (1891) —Professors Gotch and Horsley ...	50	9	8
	<hr/>				50	9	8
	£100	19	4		<hr/>		
	<hr/>				£100	19	4
	<hr/>				<hr/>		

*Davy Medal Fund.*

£660 Madras Railway Guaranteed 5 per Cent. Stock.

	£	s.	d.		£	s.	d.
To Balance .....	76	19	1	By Gold Medals .....	34	10	6
" Dividends .....	32	3	6	" Balance .....	74	12	1
	<hr/>				<hr/>		
	£109	2	7		£109	2	7
	<hr/>				<hr/>		







The following Table shows the progress and present state of the Society with respect to the number of Fellows :—

	Patron and Royal.	Foreign.	Com- pounders.	£4 yearly.	£3 yearly.	Total.
Dec. 1, 1890 ..	5	49	168	145	150	517
Since Elected ..	..	..	+ 4	+ 1	+ 12	+ 17
Since Deceased ..	..	— 3	— 6	— 8	— 1	— 18
Nov. 30, 1891 ..	5	46	166	138	161	516

Account of the appropriation of the sum of £4,000 (the Government Grant) annually voted by Parliament to the Royal Society, to be employed in aiding the advancement of Science (continued from Vol. XLVIII, p. 486).

1890—1891.

	£
Prof. Piazzi Smyth, for further Research in Spectroscopic Measurement of Ultra Definition and Extreme Separation....	70
E. H. Griffiths, for Apparatus required in a Re-determination of the Value of Joule's Equivalent.....	50
A. M. W. Downing, to determine the Orbit of the Minor Planet Flora.....	20
Dr. Edridge Green, to ascertain quantitatively the Percentage of Loss of Light in cases of Colour-blindness due to a Shortened Spectrum.....	20
H. L. Callendar, for the Manufacture of a Standard Platinum Thermometer, and the Comparison of the same with an Air Thermometer at High as well as Low Temperatures. ....	80
Prof. J. N. Lockyer, for Observations (chiefly Long Exposure Photographs) of Nebulæ, and of Groups III and V.....	125
J. Joly, for Extension of his Research on the Specific Heats of Gases at Constant Volume to Higher Pressures .....	40
Prof. G. H. Darwin, to make an Abacus with Card Guide Plates for the Reduction of Tidal Observations .....	50
J. H. Gray, for a Determination of the Thermal Conductivity of Metals.....	50
Carried forward .....	£505

	£
Brought forward .....	505
Town Gardening Committee of the Manchester Field-Naturalists' Society, and Scientific Committee of the Royal Horticultural Society, for an Analysis of the Air and Fog of Manchester and Salford, and for further Inquiry into the Composition of London Fog and its Effects on Cultivated Plants .....	50
Dr. T. Ewan, for Apparatus to aid in a Research on the Absorption Spectra of Copper Salts in Solution, and the Changes which they undergo on Dilution, Heating, &c. ....	25
G. Higgs, for the Production by Photography of a Map of the Normal Solar Spectrum, &c., from w.l. 3,000 to 10,000. ....	50
Prof. Tait, for a Research on the circumstances of Impact, especially its Duration. ....	30
G. S. Turpin, for Continuation of a Research on the Ignition of Explosive Gaseous Mixtures .....	50
Prof. J. V. Jones, for a further Determination of the Ohm by the Method of Lorenz .....	50
Dr. W. Huggins, for the Continuance of his Work on the Motions and Constitution of the Stars and Nebulæ .....	100
Prof. Rücker and Prof. Thorpe, towards the expense of a Magnetic Survey of the United Kingdom. ....	600
Dr. J. B. Tingle, for an Investigation of the Action of various Ethereal Salts on Camphor and other Ketones, with special reference to the Elucidation of the Constitution of Camphor .....	15
Dr. Dittmar, for a Re-determination of the Atomic Weights of Potassium, Sodium, and Lithium. ....	100
Prof. W. H. Perkin, Jun., for a Research on the Constitution of Camphoric, Camphoronic, and allied Acids .....	75
J. N. Collie, for a Research on the Constitutional Formulæ of (1) Dehydracetic Acid; (2) Meconic and Pyromeconic Acids .....	20
Dr. H. Marshall, for a Research on the Oxidation of various Substances (Salts, Acids, &c.) by means of Electrolysis .....	25
W. H. Pendlebury, for the Investigation of a Case of Gradual Chemical Change, namely, that between Potassium Chromate and Potassium Iodide in presence of an Acid. ....	15
J. A. Harker, to investigate further the Change of Volume which occurs in the Combination of Chlorine and Hydrogen, and to find out its Cause; and for two other specified Researches .....	50

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Carried forward. .... £1,760

	£
Brought forward .....	1,760
W. A. Shenstone, for Payment of an Assistant in investigating (1) the Influence of the Silent Discharge of Electricity on Gases; (2) the Conditions of the Formation of Haloid Salts.....	50
Dr. C. R. A. Wright, for Continuation of Experiments on "Ternary Alloys," more especially those containing Lead (or Bismuth) and Zinc as Immiscible Metals with Cadmium (or Antimony) as "Solvent" Metal.....	50
Dr. A. W. Bishop, to continue the Investigation of the Compounds of Camphor-aldehyde ( $C_{11}H_{16}O_2$ ) already begun in conjunction with Prof. Claisen, of Munich .....	20
Dr. H. G. Colman, for a Research on the Action of Acetobutyl Bromide on Ethyl Malonate .....	20
Dr. T. R. Marshall, for completing a Research on the Constitution of Trimethylene Derivatives, and for other specified Researches.....	25
Prof. W. R. Dunstan, for a Research on the Action of Alkalies on the Nitro-paraffins .....	50
S. U. Pickering, for Continuation of his Research on the Nature of Solutions.....	25
Dr. F. S. Kipping, for a Study of Fluorescent Compounds..	25
H. N. Dickson, for an Investigation of the Physical Condition of the Waters of the English Channel.....	100
J. Murray, for further Examination of the Western Lochs of Scotland.....	300
Western Scotland Marine Flora Committee (per G. Murray), for the Exploration of the Marine Flora of Western Scotland.	100
Prof. T. Johnson, for an Investigation of the Marine Flora of Ireland, especially the West and South-west Coasts.....	30
J. M. Macfarlane, for a further Study of Plant Hybrids....	25
W. T. Thiselton Dyer, for a Collector to be attached to the Sierra Leone Delimitation Commission .....	350
T. W. Bridge, for further Investigations into the Anatomy of the Teleostean Fishes.....	20
A. Willey, for an Investigation of the Anatomy of <i>Balanoglossus</i> ( <i>Extended Grant, £150 for two years</i> ).....	300
Liverpool Marine Biology Committee (per W. A. Herdman), towards the Expenses of the further Exploration of the Marine Fauna and Flora of Liverpool Bay .....	50
Prof. A. C. Haddon, for an Investigation on the Anatomy of the Actiniæ and Corals of Torres Straits.....	50
Carried forward.....	£3,350

	£	s.	d.
Brought forward .....	3,350	0	0
Dr. D. Sharp (for a Committee), to report on the present State of our Knowledge of the Sandwich Islands, and to investigate ascertained Deficiencies in the Fauna	200	0	0
W. Garstang, to obtain material for working out the Embryology of certain Tunicata .....	50	0	0
T. Scott, for Study and Description of the Entomostraca obtained by Mr. Rattray in 1886.....	20	0	0
Secretary, Royal Society, for Balance of Account for Objectives purchased in pursuance of a Resolution of Board G, and engraving the same .....	5	11	6
Dr. L. Shore, for an Investigation of the Action of the Epithelial Cells of the Intestinal Mucous Membrane on Peptone during Absorption .....	20	0	0
Dr. McFadyean and Dr. A. P. Aitken, for a Research on the Toxic Substances generated by the Microbes of Anthrax, Black-quarter, and Glanders, and on a "Chemical Vaccine" for each of these Diseases .....	75	0	0
C. S. Sherrington, for the Examination in detail of the Actions and the Topography of Reflex and Automatic Centres in the Lower Half of the Spinal Cord, &c. ....	75	0	0
Prof. Schäfer, for (specified) Investigations into the Functions of the Central Nervous System in Monkeys and Dogs .....	75	0	0
Research Committee, Pharmaceutical Society (per Prof. W. R. Dunstan), for an Investigation of the Nature of the Alkaloids contained in the various Species of Aconite .....	150	0	0
G. N. Stewart, for Investigation of the Vasomotor Regulation of the Circulation in particular Organs and Parts of the Body .....	10	0	0
Dr. P. F. Frankland, for continuing his Investigations on the Chemical Changes brought about by specific Micro-organisms .....	80	0	0
L. Hill and W. M. Bayliss, for a Research on the Formation of Heat in Secreting Glands and the Influence of the Nervous System thereon .....	25	0	0
W. Saville Kent, for a Research on Corals and Coral Animals in the Fiji Islands .....	100	0	0
Prof. D. E. Jones, in aid of an Investigation on Hertzian Vibrations .....	35	0	0
J. H. Cooke (per J. Murray), in aid of a Geological Investigation in Malta and adjacent Islands .....	20	0	0
	<hr/>	<hr/>	<hr/>
	£4,290	11	6

<i>Dr.</i>			<i>Cr.</i>		
	£	s. d.		£	s. d.
To Balance, November 30, 1890 .	460	18 8	By Appropriations, as		
„ Grant from Treasury . . . . .	4,000	0 0	above . . . . .	4,290	11 6
„ Repayments . . . . .	240	6 8	„ Salaries, Printing,		
„ Interest on Deposit . . . . .	56	15 6	Postage, Advertis-		
			ing, and other Ad-		
			ministrative Ex-		
			penses . . . . .	93	15 1
			„ Balance, Nov. 30,		
			1891 . . . . .	373	14 3
	<u>£4,758</u>	<u>0 10</u>		<u>£4,758</u>	<u>0 10</u>

## Account of Grants from the Donation Fund in 1890-91.

	£	s.	d.
Prof. Haswell, towards the Institution of a Marine Biological Station at Sydney . . . . .	50	0	0
Dr. Sclater, to enable Capt. Swayne to procure him Specimens of African Antelopes . . . . .	20	0	0
Dr. Woodward, to aid Dr. Forsyth-Major in his Researches on Fossil Mammalia . . . . .	50	0	0
Dr. Woodward, in aid of the Publication of the Researches of Dr. Forsyth-Major on Miocene Fossil Mammals of the Island of Samos . . . . .	100	0	0
Prof. Haddon, in aid of the Publication of his Ethnographical Researches in the Torres Straits . . . . .	50	0	0
Mr. Carruthers, in aid of Mr. E. J. Baker's Visit to the Herbaria of Madrid and Geneva . . . . .	15	0	0
A. Soper, Balance of the Grant of £200 to the late W. de la Rue for completing his Catalogue of Latitude and Longitude of Solar Spots . . . . .	17	13	0
	<u>£302</u>	<u>13</u>	<u>0</u>